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Research Article

First records of two genera and three carpenter moths (Lepidoptera, Cossidae) from Georgia

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Abstract

The aim of the present study is to provide an update on the Lepidoptera diversity of Georgia, with the first records of the *Cecryphalus* Schoorl, 1990, and *Dieida* Strand, 1911, genera, along with *Dyspessa infuscata* (Staudinger, 1892). The records are based on three male specimens of *Cecryphalus strix* (Grum-Grshimailo, 1896), a single male specimen of *Dieida ledereri* (Staudinger, 1871), and a single female specimen of *D. infuscata* collected in different parts of Georgia. Digital images of imagoes, first descriptions, and pictures of male *D. ledereri* genitalia, along with collecting data, are provided.

Key words: Caucasus, Cossoidea, Heterocera, Heteroneura, new records

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Introduction

Romanoff (1885) laid the foundation for the knowledge on the species composition of the Cossidae fauna of Georgia, and it has been constantly growing since then (Milyanovsky 1964; Didmanidze 1975, 1976a, 1976b, 1978, 1980; Didmanidze and Zurashvili 1981). The most recent study of Georgian carpenter moths reports 14 species comprised in ten genera (Didmanidze and Yakovlev 2007), while the biology of many species still remains understudied. In this article, information on the first records of three more species and two genera is provided, namely *Cecryphalus strix* (Grum-Grshimailo, 1895), *Dieida ledereri* (Staudinger, 1871), and *Dyspessa infuscata* (Staudinger, 1892), increasing the total number of genera and species of Cossidae to 12 and 17, respectively.

Cecryphalus Schoorl, 1990, consists of only two known nocturnal species, which inhabit deserts of Central Asia, North Africa, and South Caucasus (Yakovlev 2011a). Only *C. strix* is known to occur in the South Caucasus, reported from Azerbaijan and Armenia (Alipanah et al. 2021).

Dieida Strand, 1911, comprises only six species of diurnal Palaearctic Cossidae (Japaridze and Hulsbosch 2023). A single species, *D. ledereri*, is found in the South Caucasus, more precisely in Azerbaijan (Alipanah et al. 2021; Japaridze and Hulsbosch 2023).

Dyspessa Hübner, [1820] is the most speciose genus of nocturnal carpenter moths, which includes over 80 species widely distributed in the western Palaearctic (Yakovlev et al. 2016, 2022). Most of the species have a restricted distribution,

limited by mountain ranges and deserts (Yakovlev and Dubatolov 2013), and many of them are local endemics (Yakovlev et al. 2022). To date only four species have been reported from Georgia: *D. alpherakyi* (Christoph, 1885), *D. pallidata* (Staudinger, 1892), *D. salicicola* (Eversmann, 1848), and *D. ulula* (Borkhausen, 1790).

Materials and methods

The specimens were collected via the light traps, except the male specimen of *Dieda ledereri* was hand collected. Sampling details are given below. The elevations and GPS coordinates (given in WGS84) were obtained via Garmin GPS MAP 64s. All specimens are deposited in the personal collection of the author (hereafter as JLGT). Specimens were examined on the basis of both external and internal morphological characters. The genital dissection was performed with the technique published by Robinson (1976), with certain modifications (Fibiger and Goater 1997). Potassium hydroxide (15% KOH solution) was used to macerate the full abdomen. The weakly sclerotized structures were stained with chlorazol black and then mounted into Euparal. Preserved specimens were photographed using a Canon EOS 60D camera with a Canon EF 60 mm f/2.8 Macro USM lens. Digital images were prepared using Zerene Stacker image stacking software and Adobe Photoshop CS6. Genitalia was photographed using a Nikon SMZ745T stereo microscope with a Moticam 2500 camera on it.

Abbreviations

MR – Managed Reserve;
Mun – Municipally;
NP – National Park;
Un – uncus;
Gn – gnathos;
Tg – tegumen;
Vl – valvae;
Sl -– sacculus;
Jx – juxta;
Vi – vinculum;
Sa – saccus;
Ad – aedeagus;
Ve – vesica.

Results

Family Cossidae Leach, 1815
Genus *Cecryphalus* Schoorl, 1990

***Cecryphalus strix* (Grum-Grshimailo, 1895)**
Figs 1–2

Cecryphalus nubila: Yakovlev 2011a: 20, figs 2–4 (♂♀)
Cecryphalus nubila: Yakovlev 2011b: 124, pl. 5, fig. 7 (♂)
Cecryphalus strix: Yakovlev et al. 2018: 417, figs 5–12, 26–27 (♂♀)
Cecryphalus nubila: Alipanah et al. 2021: 66, fig. 18F (♂)

Material examined. GEORGIA • 2♀♀; Dedoplistkaro Mun., Vashlovani NP; N41.118327°, E46.640500°; 114 m a.s.l.; leg: L-G Japaridze; 6 June 2023; JLGT • 1♀; Chachuna MR; N41.220392°, E45.972397°; 248 m a.s.l.; leg: A. Seropian; 17 July 2023; JLGT.

Remarks. The species is known to occur in Southern Kazakhstan, Kyrgyzstan, Southern Mongolia, Northwestern China, Tajikistan, Uzbekistan, Turkmen-

Figures 1–2. *Cecryphalus strix* male, dorsal view (**1:** specimen from Vashlovani NP; **2:** specimen from Chachuna MR). Scale bar: 5 mm.

istan, Azerbaijan, Northern Iran, and South Armenia (Sheljuzhko 1913; Yakovlev 2011a, 2011b; Alipanah et al. 2021). It is the first record of *Cecryphalus* in Georgia. Host plant and immature stages are unknown.

Genus *Dieda* Strand, 1911

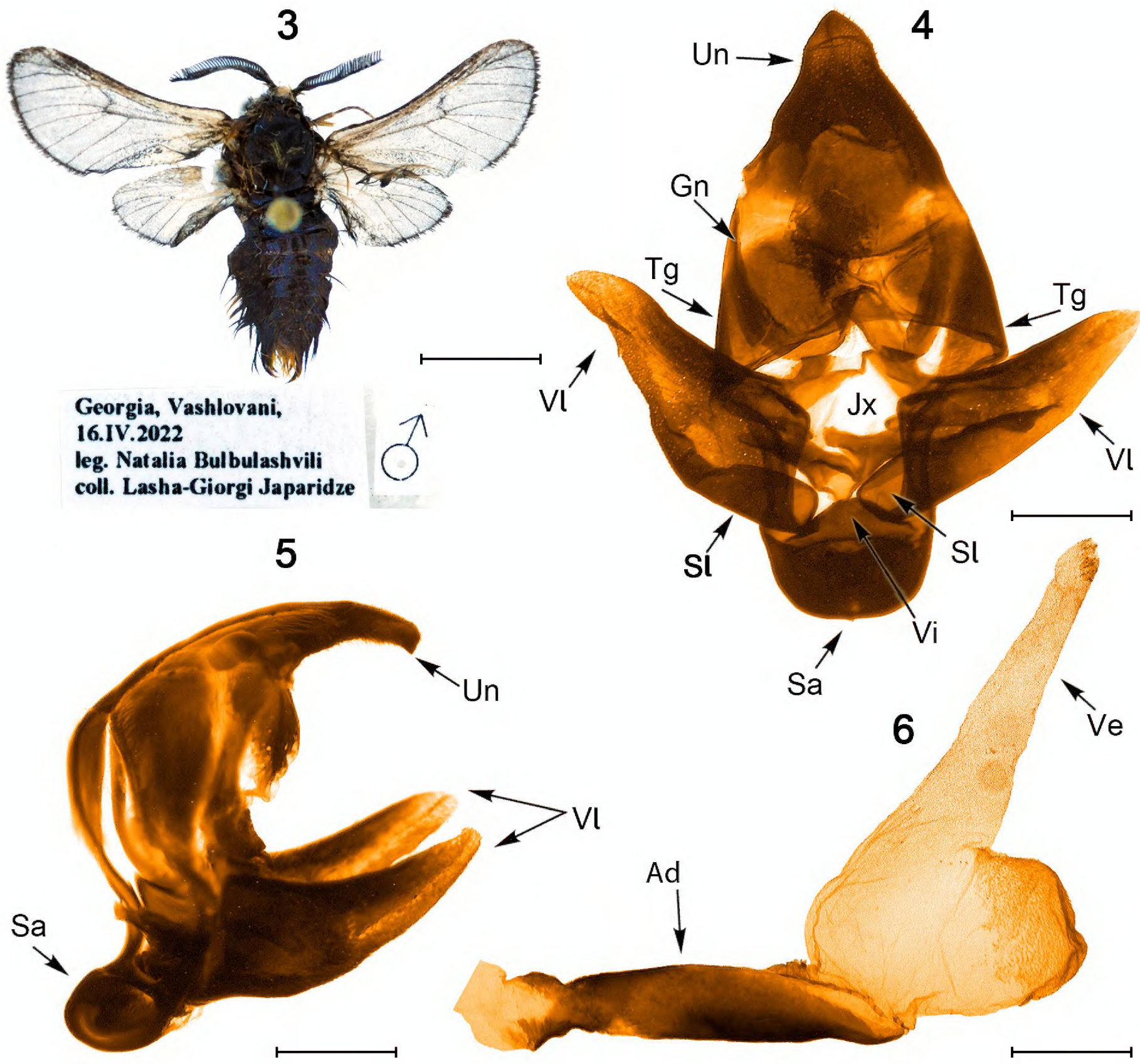
Dieida ledereri (Staudinger, 1871)

Figs 3–6

Dieida ledereri: Daniel 1955: 175 (♂♀)

Material examined. GEORGIA • 1♂; Dedoplistksaro Mun., Vashlovani NP; N41.1194226°, E46.6097341°; 460 m a.s.l.; leg: N. Bulbulashvili; 16 April 2022; JLGT.

Description. Male genitalia. Tegumen long and triangular; uncus small, sclerotized, triangular peak-shaped. Socii oval with setae. Arms of gnathos long, thin, and fused by membrane; gnathos knob, triangular, and membranous. Valvae lanceolate, 6 times longer than wide; apex roundish, basal half of costal



Figures 3–6. *Dieida ledereri* male (**3:** dorsal view; **4:** genitalia frontal view; **5:** genitalia in lateral view; **6:** aedeagus separated and everted vesica in lateral view). Abbreviations as in main text. Scale bars: 5 mm (3); 0.5 mm (4–6).

margin convex, apical half concave, dorsal margin 2/3 from base slightly concave, apical part 1/6 membranous, basal part 5/6 sclerotized; margin between membranous and sclerotized parts clear and roundish, dorsally membranous reach end of sacculus. Sacculus clearly separated from valvae, slender, 2/3 length of valvae; base roundish, gradually narrowing towards the outer end. Arms of transtilla relatively short, thin, and strongly sclerotized; transtilla knob not well visible, membranous. Lateral juxta triangular. Saccus well developed, nearly half as long as width, apex rounded, anterior margin strongly sclerotized, slightly concave, posterior margin of vinculum rounded. Aedeagus cylindrical, slightly longer than valvae, without cornutus. Vesica membranous, basal part large and roundish, distal part gladiate, without cornutus.

Remarks. The species is known from Turkey, Azerbaijan, Afghanistan, Syria, Iraq, Israel, and Iran (Schoorl 1990; Alipanah et al. 2021; Japaridze and Hulsbosch 2023). It is the first record of *Dieida* from Georgia. Host plant, eggs, and caterpillar are unknown.

It should be noted that the only specimen of *D. Iedereri*, mentioned above, was preyed upon by a robber fly (Asillidae), which was caught and dropped the specimen on the ground. Unfortunately, the specimen later was damaged during the transportation, thus we don't have the photograph of the undamaged specimen to fully express the natural colors. However, the undamaged specimen had bipectinate black antennae with 2/3 white on the anterior side, half the length of the forewing, and rami long and black. Head, tegula, thorax, and abdomen densely hirsute and black with a golden terminal part, golden-brown both dorsally and ventrally. Forewings semitranslucent; basal area white-ivory. Hindwings semitranslucent; white-ivory spots on submedian area and hind margin.

Genus *Dyspessa* Hübner, [1820]

Dyspessa infuscata (Staudinger, 1892)

Fig. 7

Dyspessa infuscata: Yakovlev 2005: pl. I, fig. 3 (♂)

Material examined. GEORGIA • 1♀; Tbilisi, Nutsubidze plateau; N41.7278241°, E44.7143434°; 621 m a.s.l.; leg: G. Makharadze; 24 April 2024; JLGT.

Remarks. The species is distributed in Turkey, Russia (North Caucasus), Ukraine (Crimea), South Caucasus, and Syria (Yakovlev 2005, 2011b). As the author does not specify an exact location within the South Caucasus or mention the species in Georgia or South Caucasus in his later works, this appears to be the first documented record in Georgia.

Discussion

Recent studies and collecting efforts in Georgia and adjacent territories have resulted in descriptions of several new species of Cossidae: *Holcocerus didmanidzae* Yakovlev 2006 from Georgia, *Stygiodies nupponenorum* Yakovlev and Saldaitis 2011 from Turkey, *Isoceras shevnini* Yakovlev 2015 from Armenia, *Phragmataecia effendii* Yakovlev and Snegovaya 2020 from Azerbaijan, and *Dieida versicolor* Japaridze and Hulsbosch 2023 from Turkey. Despite the

Figures 7. *Dyspessa infuscata*, female, dorsal view. Scale bar: 5 mm.

Cossidae fauna of Turkey being relatively well studied compared to the South Caucasus, there still has been a record of a new genus, namely *Stygia* Latreille, 1802, in recent years (Yakovlev and Ströhle 2016). Since some of the species listed above are known only from type specimens, and others are described based solely on males or females, investigating the biology and life cycles of these rare species would be highly valuable. Given the limited study of the Cossidae family in Georgia, it is quite possible that rare diurnal genera, such as *Stygioides* Braud, 1853, may still await discovery in the country's remote arid regions.

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Additional information

Conflict of interest

The author has declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

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Data availability

All of the data that support the findings of this study are available in the main text.

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